плотностью потока мощности 0,1 мВт/см^2, при экспозиции однократно 30 минут. Контролем служили необработанные семена. Для моделирования осмотического стресса в кюветы наливали по 100 мл NaCl с различными концентрациями солей NaCl (50 мМ, 100 мМ, 150 мМ, 200 мМ). Контролем служила H_2O – дистиллирована.

Данное исследование показало, что низкоинтенсивное электромагнитное излучение миллиметрового диапазона оказало положительное влияние на энергию прорастания и всхожесть *Hordeum vulgare* L. сорта Огоньковский при хлоридном засолении. Концетрации NaCl 50 мМ и NaCl 100 мМ оказались приемлемые для прорастания семян, а NaCl 150 мМ и NaCl 200 мМ оказали ингибирующее действие на растение. Исследуемое излучение показало положительный результат на изменение морфометрических показателей *Hordeum vulgare* L. в условиях осмотического стресса.

ESR-DOSIMETRY OF IONIZING RADIATION WITH THE HELP OF TEFLON DETECTORS

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The abstract is devoted to the method of measurement of absorbed dose of ionizing radiation with the help of an ESR-spectrometer “Minsk-12M”. It is based on the determination of calibration curve for the device using teflon detectors and comparison of its obtained spectra with reference data for alanine dosimeters.

ESR-dosimetry of ionizing radiation (IR) became widely used in research after the discovery of the electron paramagnetic resonance by Zavoisky in 1944. Nowadays, in the practice of determining the absorbed dose of IR (ADIR) are used such methods as: photographic, ionization, thermoluminiscent. The method of determining ADIR using ESR phenomenon provides more accurate values (error less than 5%) in the range of doses 5-200 kGy. To this date, ESR-dosimetry hasn’t been widely adopted in Russia due to the lack of instrumentation base and the high cost of imported ESR-spectrometers.

The purpose of this work is to study the possibility of ESR-dosimentry usage for ADIR of electron radiation measurements during sterilization of medical products in the CRS UrFU with the help of teflon detectors.

ESR-spectrometer “MINSK-12M” was used in this work. Spectrometer was provided by the department of experimental physics of the PTI UrFU. We used alanine detectors (in the form of strips) produced by BRUKER to study the characteristics and to check the possibility of correct operation of the ESR-spectrometer in the IR dose measurement mode. Standard Mn^{2+} in MgO and samples of teflon together with strips

dosimeters SO PD(F)R – 5/50, which is the state standard of photon and electron radiation, were also used for these purposes.

Alanin forms a stable free radical under the action of IR, which produces a characterizing it ESR-signal. Its intensity is proportional to the absorbed dose and doesn't depend on the power and energy of radiation [1]. The spectra of alanine and standard Mn^{2+} in MgO were compared with literature data with the help of ESR-spectrometer "MINSK-12M". Since alanine detectors are rather expensive and difficult to buy, it was decided to find cheaper substances suitable for routine dosimetry. In this work we use teflon for these purposes. It gives characterizing ESR signal, which intensity rises with the increasing of absorbed dose. Its samples were irradiated in CRS UrFU in the dose range between 14 and 65 kGy. The dose dependency, which play a role of calibration curve for teflon detectors has been built according to the measured data of ESR-spectra and strip dosimeters. The analytical dependency between the peak amplitude in ESR signal and absorbed dose is found as well. The results of studies of the main technical parameters of the ESR-dosimeter have shown the possibility of its usage for solving issues in the field of high-dose dosimetry of quantum radiation with the help of Teflon detectors.

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ПОСТУПЛЕНИЕ ИНЕРТНЫХ РАДИОАКТИВНЫХ ГАЗОВ В АТМОСФЕРУ ПРИ НОРМАЛЬНОЙ ЭКСПЛУАТАЦИИ АЭС

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EMISSIONS OF NOBLE GASES TO THE ATMOSPHERE DURING NORMAL OPERATION OF NPP

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Annotation. The analysis of data on noble gas emissions from nuclear power plants with various types of reactor installations was carried out. Radioactive isotopes of argon and xenon, which form at least 50% of the activity of NPP emissions with any type of reactor facility, have been determined.

Инертные радиоактивные газы (далее ИРГ) формируют от 55% до 90% суммарной активности выбросов АЭС [1]. При работе реакторов типов AGR, BWR и LWGR ИРГ вносят наибольший вклад в формирование эффективной дозы